Cisco Catalyst 2360 Series Switches

Product Overview

The Cisco Catalyst® 2360 Series Switches are high-speed Layer 2 top-of-rack switches that provide Gigabit Ethernet server aggregation in the data center. The Cisco Catalyst 2360 Series is designed to meet the demands of today's data center, including high performance and high availability.

The Cisco Catalyst 2360 Series provides wire-rate performance, local switching, with a non-blocking, low-latency architecture. The Cisco Catalyst 2360 Series comes with reversible front-to-back or back-to-front airflow, as well as power and cooling redundancy. It provides these features with extremely low power consumption. Figure 1 shows a Cisco Catalyst 2360 Series Switch.

Figure 1. Cisco Catalyst 2360 Series Switch

The Cisco Catalyst 2360 Series switches offers the following features:

- 48 ports of Gigabit Ethernet 10/100/1000-Gbps downlink connectivity
- Four 10 Gigabit Ethernet Small Form-Factor Pluggable Plus (SFP+) uplinks
- Dual field-replaceable power supplies, providing power redundancy and uninterrupted operation
- Field-replaceable dual-fan module with reversible airflow (front-to-back or back-to-front) and cooling redundancy
- USB storage interface for file backup, distribution, and simplified operations
- Mini-USB console port on the front of the switch for easy management access
- LAN Lite software features to meet ToR Layer 2 switching requirements
- 1-year limited warranty

Switch Configuration

Table 1 shows the configuration information for the Cisco Catalyst 2360 Series.

Table 1. Cisco Catalyst 2360 Series Configuration

Switch Model	Description	Uplinks
Cisco Catalyst 2360 Series switches with 10 Gigabit uplinks and 10/100/1000-Gbps Ethernet connectivity		
Cisco Catalyst 2360-48TD-S Switch	48X Ethernet 10/100/1000-Gbps ports	4X 10 Gigabit Ethernet Small Form-Factor Plus Pluggable (SFP+) ports

Features and Benefits

Power Supply Redundancy

The Cisco Catalyst 2360 Series can operate on a single hot-swappable power supply but can also accommodate a second power supply (Figure 2). The second power supply provides power redundancy, and if either power supply fails, the other power supply transparently takes over switch operation. Both power supplies are hot swappable.

Figure 2. Cisco Catalyst 2360 Series: Dual Hot-Swappable Power Supplies

Reversible Airflow and Cooling Redundancy

The Cisco Catalyst 2360 Series is cooled by a hot-swappable fan module that is designed with two fans, providing cooling redundancy. The fan module provides optional front-to-back or back-to-front airflow through the switch. Airflow direction can be reversed by removing the fan module, rotating it 180 degrees, and reinserting it in the slot.

Figure 3. Cisco Catalyst 2360 Series: Hot-Swappable Dual-Fan Unit

Dynamic Buffer Allocation

The switch can dynamically allocate additional buffering on ports that experience microburst traffic. All ports are allocated reserved buffer space and when ports experience bursts of traffic, additional buffering is allocated from a shared buffer pool.

Sustainability

Cisco Catalyst switching solutions enable greener practices through measurable power efficiency, integrated services, and innovations such as Cisco® EnergyWise, an enterprisewide solution that monitors and conserves energy with customized policies. Together, Cisco EnergyWise technology and Cisco Catalyst switches reduce greenhouse gas (GhG) emissions and increase energy cost savings and sustainable business behavior. Sustainability features in the Cisco Catalyst 2360 Series includes the following:

- **Cisco EnergyWise technology:** Cisco EnergyWise is an innovative architecture added to fixed-configuration switches, including the Cisco Catalyst 2360 Series, that promotes companywide sustainability by reducing energy consumption across an entire corporate infrastructure. Cisco EnergyWise enables companies to measure the power consumption of the network infrastructure and network-attached devices and manage power consumption with specific policies, reducing power consumption to lower costs.

  Cisco EnergyWise encompasses a highly intelligent network-based approach to communicate messages that measure and control energy between network devices and endpoints. The network discovers Cisco EnergyWise manageable devices, monitors their power consumption, and takes action based on business rules to reduce power consumption. The management interface uses standard Simple Network Management Protocol (SNMP) or TCP to integrate Cisco and third-party management systems.
- **Efficient switch operation:** Cisco Catalyst 2360 Series switches, designed and engineered by Cisco, provides significant power savings through low-power operation for industry best-in-class and power consumption capabilities. The Cisco Catalyst 2360 Series ports offer reduced-power modes so that a port not in use can move into a lower power utilization state.

Easy-to-Use Deployment and Control Features

The Cisco Catalyst 2360 Series helps reduce operating costs through the following features:

- Autonegotiation on all ports automatically selects half- or full-duplex transmission mode to optimize bandwidth.
- Dynamic Trunking Protocol (DTP) facilitates dynamic trunk configuration across all switch ports.
- Port Aggregation Protocol (PAgP) automates the creation of Gigabit EtherChannel groups to link to another switch, router, or server.
- Link Aggregation Control Protocol (LACP) allows the creation of Ethernet channeling with devices that conform to IEEE 802.3ad. This feature is similar to Cisco EtherChannel technology and PAgP.
- Automatic media-dependent interface crossover (MDIX) automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.
- Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD allow unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.
- Internet Group Management Protocol (IGMP) snooping for IPv4 and IPv6 Multicast Listener Discovery (MLD) v1 and v2 snooping provide fast client joins and leaves of multicast streams and limit bandwidth-intensive video traffic to only the requestors.
- Per-port broadcast, multicast, and unicast storm control prevent faulty end stations from degrading overall system performance.
- Cisco VLAN Trunking Protocol (VTP) supports dynamic VLANs and dynamic trunk configuration across all switches.
- Switch Port Analyzer (SPAN) allows administrators to monitor ports in a Layer 2 switch network from any other switch in the same network.
- For enhanced traffic management, monitoring, and analysis, the Embedded Remote Monitoring (RMON) software agent supports four RMON groups (history, statistics, alarms, and events).
- Trivial File Transfer Protocol (TFTP) reduces the cost of administering software upgrades by downloading from a centralized location.
- Network Timing Protocol (NTP) provides an accurate and consistent timestamp to all intranet switches.

- Cisco Emergency Responder (CER) enhances emergency calling from Cisco Unified Call Manager, helping ensure that Cisco Unified Call Manager sends emergency calls to the appropriate public safety answering point (PSAP) for the caller's location.

Advanced Intelligent Network Management Tools

The Cisco Catalyst 2360 Series offers both a superior command-line interface (CLI) for detailed configuration tasks and Cisco Network Assistant software, a PC-based tool for quick configuration based on preset templates. In addition, the CiscoWorks LAN Management Solution (LMS) supports the Cisco Catalyst 2360 Series for networkwide management.

- **Cisco Network Assistant:** This PC-based network management application designed for small and medium-sized business (SMB) networks with up to 250 users offers centralized network management and configuration capabilities. This application also provides an intuitive GUI through which users can easily apply common services across Cisco switches, routers, and access points, such as:
  - Configuration management
  - Troubleshooting advice
  - Inventory reports
  - Event notification
  - Network security settings
  - Password synchronization
  - Drag-and-drop Cisco IOS® Software upgrades

  For detailed information about Cisco Network Assistant, visit http://www.cisco.com/go/cna.
- **CiscoWorks LMS:** This comprehensive network lifecycle management solution provides an extensive library of easy-to-use features to automate the initial and day-to-day management of your Cisco network infrastructure. CiscoWorks LMS uniquely uses Cisco hardware and software platform knowledge and operating experience to provide a powerful set of work-flow focused configuration, monitoring, troubleshooting, reporting, and administrative tools, including:
  - Support for new Cisco hardware platforms the day they ship
  - Support for new technologies and services, such as Cisco EnergyWise technology, from initial deployment to day-to-day administration and management
  - Configuration management tools built on the basis of Cisco experience and Cisco Validated Design recommendations
  - Monitoring and troubleshooting capabilities that incorporate Cisco hardware best practices and diagnostic features
  - Automated management of hardware inventories, security vulnerabilities (through product security incident response teams [PSIRTs]), and platform end-of-life and support cycles

  For detailed information about CiscoWorks LMS, go to http://www.cisco.com/en/US/products/sw/cscowork/ps2425/index.html.

Security

The Cisco Catalyst 2360 Series LAN Lite switch provides basic security:

- Static Access Ports
- Multilevel Console Security to prevent unauthorized users from altering the switch configuration

- Secure Copy Protocol (SCP) to enable network administrators to copy configurations and Cisco IOS Software images through encrypted channels
- Secure Shell (SSH) Protocol v2 and SNMPv3, which provide network security by encrypting administrator traffic during telnet and SNMP sessions; SSHv2 and the cryptographic version of SNMPv3 require a special cryptographic software image because of U.S. export restrictions

Layer 2 Networking

The Cisco 2360 Series provides Layer 2 networking to enable availability. Features include the following:

- IEEE 802.1s/w Rapid Spanning Tree Protocol (RSTP) and Multiple Spanning Tree Protocol (MSTP) provide rapid spanning-tree convergence independent of spanning-tree timers and also offers the benefit of Layer 2 load balancing and distributed processing
- Per-VLAN Rapid Spanning Tree Plus (PVRST+) allows rapid spanning-tree reconvergence on a per-VLAN spanning-tree basis, without requiring the implementation of spanning-tree instances
- Switch-port autorecovery (Errdisable) automatically attempts to reactivate a link that is disabled because of a network error
- Up to 128 VLANs and up to 128 spanning-tree instances per switch are supported

Quality of Service

The Cisco Catalyst 2360 Series offers intelligent services that keep everything flowing smoothly. Industry-leading mechanisms for marking, classification, and scheduling deliver superior performance for data traffic, all at wire speed. Following are some of the quality-of-service (QoS) features supported in the Cisco Catalyst 2360 Series:

- IEEE 802.1p class of service (CoS)
- Four egress queues per port to enable differentiated management of different traffic types across the stack
- Shaped Round Robin (SRR) scheduling to help ensure differential prioritization of packet flows by intelligently servicing the ingress and egress queues

Specifications

Tables 2, 3, and 4 list hardware and power specifications for the Cisco Catalyst 2360 Series.

Table 2. Hardware Specifications for Cisco Catalyst 2360 Series Switches

Performance and Scalability			
Forwarding bandwidth	88 Gbps		
Flash memory	64 MB		
Memory DRAM	128 MB		
Maximum VLANs	128		
VLAN IDs	4096		
Maximum transmission unit (MTU)	Up to 9198 bytes		
Jumbo frames	9216 bytes		
Resource	**Default**	**QoS**	**Dual**
Unicast MAC addresses	8000	8000	8000
IPv4 IGMP groups	256	256	256
IPv4 MAC QoS access control entries	128	384	0
IPv4 MAC security access control entries	384	128	256
Power Supply			

• Customers can provide power to a switch only by using the C2360-PWR-135WAC power supply. The connector is located at the back of the switch. The switch has two power-supply slots. • The power supply is an autoranging unit. • The power supply supports input voltages between 100 and 240 VAC. • Use the supplied AC power cord to connect the AC power connector to an AC power outlet. See Table 7 for a list of supported power cords.				
LED Indicators				
• Per-port status: Link integrity, disabled, activity, speed, and full duplex • System status: System, link status, link duplex, and link speed				
Dimensions (H x W x D)				
Model	**Inches**	**Centimeters**		
WS-C2360-48TD-S	17.5 x 13.5 x 1.75 in	44.4 x 34.3 x 4.4 cm		
C2360-PWR-135WAC	4 x 7.5 x 1.5 in	10.1 x 19.0 x 3.8 cm		
C2360-FAN	1.5 x 7.5 x 1.5 in	3.8 x 19.0 x 3.8 cm		
Weight				
Model	**Pounds**	**Kilograms**		
WS-2360-48TD-S	13 lb	5.9 kg		
C2360-PWR-135WAC	2 lb	0.9 kg		
C2360-FAN	0.5 lb	0.22 kg		
Environmental Ranges				
	Fahrenheit	**Centigrade**		
Operating temperature up to 5,000 ft (1,500 m)	0º to 113ºF	-5º to 45ºC		
Operating temperature up to 10,000 ft (3,000 m)	23º to 104ºF	-5º to 40ºC		
Short-term exception at sea level*	23º to 31ºF	-5º to 55ºC		
Short-term exception up to 5,000 feet (1,500 m)*	23º to 122ºF	-5º to 50ºC		
Short-term exception up to 10,000 feet (3000 m)*	23º to 113ºF	-5º to 45ºC		
	Feet	**Meters**		
Operating altitude	Up to 10,000 ft	Up to 3000m		
Storage altitude	Up to 13,000 ft	Up to 4000m		
Operating relative humidity	10 to 95% noncondensing			
Storage relative humidity	10 to 95% noncondensing			
* Not more than the following in a 1-year period: 96 consecutive hours, or 360 hours total, or 15 occurrences				
Acoustic Noise				
Measured per ISO 7779 and declared per ISO 9296. Bystander positions operating mode at 77℉ (25℃) ambient.				
	Sound Pressure		**Sound Power**	
Model	**LpA(Typical)**	**LpAD(Maximum)**	**LwA (Typical)**	**LwAD (Maximum)**
WS-C2360-48TD-S	40 dB	43 dB	4.9 B	5.2 B
Mean Time Between Failures (MTBF)				
	With no power supply	**With 1 power supply**	**With 2 power supplies**	
WS-C2360-48TD-S	302,566 hr	291,987 hr	279,521 hr	
C2360-PWR-135WAC	300,000 hr (ambient 40C);			

Table 3. Power Specifications for Cisco Catalyst 2360 Series Switches

Description	**Cisco Catalyst 2360 Series Specifications**	
Model	**WS- C2360-48TD-S**	
100 Percent Throughput with 1 power supply		**100 Percent Throughput with 2 power supplies**
Measured power consumption	63.475W	63.177W
10 Percent Throughput with 1 power supply		**10 Percent Throughput with 2 power supply**

Measured power consumption	62.023W	61.311W
0 Percent Throughput with 1 power supply		**0 Percent Throughput with 2 power supply**
Measured power consumption	63.02W	62.75W
Ports Unconnected, with 1 power supply		**Ports unconnected, with 2 power supply**
Measured power consumption	32.02W	34.38W

Table 4. Voltage and Full Power Rating for Power Supply

	Model	**Voltage (Autoranging)**	**Current**	**Frequency**
	C2360-PWR-135WAC	100 to 240 VAC	2 to 1A rating	50 to 60 Hz
	Model	**Power Rating**		
	C2360-PWR-135WAC	0.2 kVA		

Standards and Safety Compliance

Tables 5 and 6 provide management and standards and safety and compliance information for the Cisco Catalyst 2360 Series.

Table 5. Management and Standards Support for Cisco Catalyst 2360 Series Switches

Description	Specification	
Management	• BRIDGE-MIB • CISCO-CABLE-DIAG-MIB • CISCO-CDP-MIB • CISCO-CLUSTER-MIB • CISCO-CONFIG-COPY-MIB • CISCO-CONFIG-MAN-MIB • CISCO-ENTITY-VENDORTYPE-OID-MIB • CISCO-ENVMON-MIB • CISCO-ERR-DISABLE-MIB • CISCO-FLASH-MIB • CISCO-FTP-CLIENT-MIB • CISCO-IGMP-FILTER-MIB • CISCO-IMAGE-MIB • CISCO-IP-STAT-MIB • CISCO-LAG-MIB • CISCO-MAC-NOTIFICATION-MIB • CISCO-MEMORY-POOL-MIB • CISCO-PAGP-MIB • CISCO-PING-MIB • CISCO-PORT-QOS-MIB • CISCO-PORT-SECURITY-MIB • CISCO-PORT-STORM-CONTROL-MIB • CISCO-POWER-ETHERNET-EXT-MIB • CISCO-PRODUCTS-MIB • CISCO-PROCESS-MIB • CISCO-RTTMON-MIB • CISCO-SMI-MIB • CISCO-STP-EXTENSIONS-MIB • CISCO-SYSLOG-MIB • Cisco-UDLDP-MIB	• CISCO-TC-MIB • CICSO-TCP-MIB • CISCO-UDLDP-MIB • CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB • CISCO-VLAN-MEMBERSHIP-MIB • CISCO-VTP-MIB • ENTITY-MIB • ETHERLIKE-MIB • IEEE8021-PAE-MIB • IEEE8023-LAG-MIB • IF-MIB • INET-ADDRESS-MIB • OLD-CISCO-CHASSIS-MIB • OLD-CISCO-FLASH-MIB • OLD-CISCO-INTERFACES-MIB • OLD-CISCO-IP-MIB • OLD-CISCO-SYS-MIB • OLD-CISCO-TCP-MIB • OLD-CISCO-TS-MIB • RFC1213-MIB • RMON-MIB • RMON2-MIB • SNMP-FRAMEWORK-MIB • SNMP-MPD-MIB • SNMP-NOTIFICATION-MIB • SNMP-TARGET-MIB • SNMPv2-MIB • TCP-MIB • UDP-MIB
Standards	• IEEE 802.1D Spanning Tree Protocol • IEEE 802.1p CoS Prioritization • IEEE 802.1Q VLAN • IEEE 802.1s Multiple Spanning Tree • IEEE 802.1w Rapid Spanning Tree	• 100BASE-FX (SFP) • 1000BASE-SX (SFP) • 1000BASE-LX/LH (SFP) • RMON I and II standards • SNMPv1, v2c, and v3

Description	Specification	
	• IEEE 802.1ab (LLDP) • IEEE 802.3ad (LACP) • IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports • IEEE 802.3 10BASE-T specification • IEEE 802.3u 100BASE-TX specification • IEEE 802.3ab 1000BASE-T specification	
RFC compliance	• RFC 768 - UDP • RFC 783 - TFTP • RFC 791 - IP • RFC 792 - Internet Control Message Protocol (ICMP) • RFC 793 - TCP • RFC 826 - ARP • RFC 854 - Telnet • RFC 951 - Bootstrap Protocol (BOOTP) • RFC 959 - FTP • RFC 1112 - IP Multicast and IGMP • RFC 1157 - SNMPv1 • RFC 1166 - IP Addresses • RFC 1256 - ICMP Router Discovery • RFC 1305 - NTP • RFC 1492 - TACACS+ • RFC 1493 - Bridge MIB • RFC 1542 - BOOTP extensions • RFC 1643 - Ethernet Interface MIB • RFC 1757 - RMON	• RFC 1901 - SNMPv2C • RFC 1902-1907 - SNMPv2 • RFC 1981 - MTU Path Discovery IPv6 • FRC 2068 - HTTP • RFC 2131 - DHCP • RFC 2138 - RADIUS • RFC 2233 - IF MIBv3 • RFC 2373 - IPv6 Aggregatable Addresses • RFC 2460 - IPv6 • RFC 2461 - IPv6 Neighbor Discovery • RFC 2462 - IPv6 Autoconfiguration • RFC 2463 - ICMP IPv6 • RFC 2474 - Differentiated Services (DiffServ) Precedence • RFC 2597 - Assured Forwarding • RFC 2598 - Expedited Forwarding • RFC 2571 - SNMP Management • RFC 3046 - DHCP Relay Agent Information Option • RFC 3376 - IGMPv3 • RFC 3580 - IEEE 802.1X RADIUS

Table 6. Safety and Compliance

Description	Specification
Safety certifications	• UL 60950-1, Second Edition • CAN/CSA 22.2 No. 60950-1, Second Edition • TUV/GS to EN 60950-1, Second Edition • CB to IEC 60950-1 Second Edition with all country deviations • CE Marking • NOM (through partners and distributors)
Electromagnetic emissions certifications (EEC)	• FCC Part 15 Class A • EN 55022 Class A (CISPR22) • EN 55024 (CISPR24) • AS/NZS CISPR22 Class A • CE • CNS13438 Class A • MIC • GOST • China EMC Certifications
Environmental	Reduction of Hazardous Substances (ROHS) 6
Telco	Common Language Equipment Identifier (CLEI) code
Warranty	As long as the original customer owns the product, unless the product is no longer sold, in which case the warranty ends on the support end of life date.

Warranty

As long as the original customer owns the product, unless the product is no longer sold, in which case the warranty ends on the support end of life date. The formal warranty statement, including the warranty applicable to Cisco software, appears in the Cisco information packet that accompanies the Cisco product. Customers should carefully review the warranty statement shipped with the specific product before use. Cisco reserves the right to refund the

purchase price as its exclusive warranty remedy. For further information about warranty terms, visit http://www.cisco.com/go/warranty.

Software Update Policy

The Cisco Catalyst 2360 Series comes with a single LAN Lite image and will be provided with maintenance updates and bug fixes designed to maintain the compliance of the software with published specifications, release notes, and industry standards as long as the original end user continues to own or use the product or for up to 1 year from the end-of-sale date for this product, whichever occurs earlier. This policy supersedes any previous warranty or software statement and is subject to change without notice.

Cisco and Partner Services

Organizations can reduce operating costs and power consumption for the Cisco Catalyst 2360 Series by using intelligent, personalized services from Cisco and our partners. Through a discovery process that begins with understanding your business objectives, we help you integrate the Cisco Catalyst switch into your architecture and incorporate network services. Sharing knowledge and leading practices, we support your success every step of the way as you deploy, incorporate, manage, and scale new technology. Choose from a flexible suite of support services designed to meet your business needs and help you maintain high-quality network performance while controlling operating costs. Please go to http://www.cisco.com/go/2360 for service options on the Cisco Catalyst 2360 Series.

Ordering Information

Table 7 provides ordering information for the Cisco Catalyst 2360 Series

Table 7. Ordering Information for Cisco Catalyst 2360 Series Switches

Part Number	Description
WS-C2360-48TD-S	• 48 Ethernet 10/100/1000 • 4 Ten Gigabit Ethernet SFP+ uplink ports • LAN Lite software
Cisco Catalyst 2360 Series Spares	
C2360-PWR-135WAC=	Catalyst 2360 Series Switches FRU Power Supply
C2360-FAN=	Catalyst 2360 Series Switches FRU Twin Fan Tray
C2360-PWR-COVER=	Catalyst 2360 Series Switches Blank Power Slot Cover
Spare Rack-Mount Kits for the Cisco Catalyst 2360 Series Switches	
RCKMNT-1RU=	Spare rack-mount kit for the Cisco Catalyst 2360 Series Switches
RCKMNT-REC-1RU=	1 RU recessed rack-mount kit for the Cisco Catalyst 2360 Series Switches
Power Cords	
CAB-AC	AC Power Cord (North America), C13, NEMA 5-15
CAB-ACA	AC Power Cord (China/Australia), C13, AS 3112
CAB-ACC	Power Cord - China
CAB-ACE	AC Power Cord (Europe), C13, CEE 7, 1.5M
CAB-ACI	AC Power Cord (Italy), C13, CEI 23-16, 2.5m
CAB-ACR	AC Power Cord (Argentina), C13, EL 219 (IRAM)
CAB-ACS	AC Power Cord (Switzerland), C13, IEC 60884-1
CAB-ACU	AC Power Cord (UK), C13, BS 1363, 2.5m
CAB-C13-C14-AC	Power cord, C13 to C14 (recessed receptacle)
CAB-IND-10A	10A Power cable for India
CAB-JPN	AC Power Cord (Japan), C13, JIS C 8303, 2.5m
Optical Transceivers for the Cisco Catalyst 2360 Series Switches	

Part Number	Description
SFP-10G-LR=	10GBASE-LR SFP+ module
SFP-10G-SR=	10GBASE-SR SFP+ module
SFP-10G-LRM=	10GBASE-LRM SFP+ module
SFP-H10GB-CU1M	10GBASE-CU SFP+ cable (1m)
SFP-H10GB-CU3M	10GBASE-CU SFP+ cable (3m)
SFP-H10GB-CU5M	10GBASE-CU SFP+ cable (5m)
SFP-H10GB-CU7M	10GBASE-CU SFP+ cable (7m)
GLC-LH-SM=	1000BASE-LX/LH SFP transceiver module for MMF and SMF, 1300-nm wavelength
GLC-SX-MM=	1000BASE-SX SFP transceiver module for MMF, 850-nm wavelength

For More Information

Cisco Catalyst 2360 Series Switches - http://www.cisco.com/go/2360.

For more information about Cisco products, contact:

- United States and Canada: (toll free) 800 553-NETS (6387)
- Europe: 32 2 778 4242
- Australia: 612 9935 4107
- Other: 408 526-7209
- URL: http://www.cisco.com

Americas Headquarters
Cisco Systems, Inc.
San Jose, CA

Asia Pacific Headquarters
Cisco Systems (USA) Pte. Ltd.
Singapore

Europe Headquarters
Cisco Systems International BV Amsterdam,
The Netherlands

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Printed in USA C78-599610-02 03/13